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11 February 1981

# Worldwide Report

ENVIRONMENTAL QUALITY

No. 289



FOREIGN BROADCAST INFORMATION SERVICE

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11 February 1981

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## BRIEFS

ENDANGERED FISH IN MEDITERRANEAN--Is there a danger of the disappearance of fish from the Mediterranean and the North Sea? FAO experts do not think so and even feel that there are possibilities for the development of fishing. However, since "these resources are not inexhaustible, fishing must be regulated as quickly as possible, that is, an exploitation level at optimal profitability must be determined." That statement was made by the secretary general of the General Council for Fishing in the Mediterranean, an FAO organization, during a recent meeting in Palma de Mallorca. Some 1.3 million tons of fish are taken from the Mediterranean basin every year, which represents barely 2 percent of the world catch. However, these fish are worth a great deal of money: they are sold at seven times the price of those from the ocean. The FAO experts determined the threshold of risk for the disappearance of fish from the Mediterranean. This is reported to be 2 million tons, therefore, well above the present tonnage. However, in certain areas, fish are veritably tracked down. Some species are exploited far beyond the desired level; e.g., sole, skates, squid, rockfish and shrimp. [Text] [Paris LE FIGARO in French 5 Jan 81 p 7] 8143

CSO: 5000

## SCIENTISTS CONCERNED OVER ENVIRONMENT DAMAGE

Bombay THE TIMES OF INDIA in English 5 Jan 81 p 5

[Excerpt] Varanasi, January 4 (PTI).

Scientists attending the Indian Science Congress here voiced concern at the adverse impact of science and technology on the country's environment.

Apart from causing water pollution, the various pesticides used might affect reproductive organs of males, Dr. A. K. Chowdhury of Calcutta warned.

Recent work has shown that at least a fraction of human infertility is caused by gene mutation caused by chemical pollutants, he said in a paper to the science congress.

In another paper, Dr. Subbash Datta and Dr. J. J. Ghosh of Calcutta said that lead metal pollution have reached hazardous proportions in the environment of Calcutta.

Roadside plants and soils analysed have indicated high lead content posing a health hazard, they said.

### Danger from Pesticides

Dr. H. P. Khataniar and Dr. N. H. Hazarika of Gauhati reported heavy sulphur dioxide and hydrogen sulphide pollution from the oil refineries in the north-east region.

In their paper they said there was strong evidence that air pollution was associated with chronic bronchitis, bronchial asthma, pulmonary oedema, emphysema and lung cancer in the north-east.

Dr. A. S. Aiyar from Bombay called for adequate assessment of agricultural pesticides particularly lindane which accounts for about a half of the total pesticides in use in India.

Dr. R. K. Bhattacharya of Bombay warned that a large number of food additives are suspected to be cancer causing. He said that increasing the use of nitrogen fertilisers had led to high concentration of nitrates in vegetables and food items.

Inside the stomach these nitrates have the potential of turning into "nitrosamines" which have recently been found to cause cancer, he said.

Dr. Bhattacharya also expressed serious concern over the possibility of formation of carcinogenic compounds to reaction between food constituents and the various food additives used to increase the shelf life of food items or to improve their flavour.

Practices such as prolonged cooking and boiling may convert some of the additives into products having "carcinogenic potential," he said. [as published]

Dr. Bani Gajra of Calcutta said the harmful effects of pollutants like DDT are enhanced by the oil that one takes with the diet. He said there was "enhanced chromosomal effect" when the pollutants were administered along with oil.

Industrial pollution is playing havoc with the waters of the river Ganga, according to Mr. J. S. Datta Munshi and Mr. K. S. Bilgrami of Bhagalpur.

Dr. L. P. Jain and Dr. C. P. Trivedi of Ujjain said that power alcohol producing industries release a huge amount of toxic materials. Deterioration of water in wells adjacent to a power alcohol plant has been noted in Ratlam, he said.

Botanists warned against indiscriminate planting of trees several of which have a harmful effect on public health because they pollute the air with pollen and spores which cause respiratory and other allergies.

Dr. Shripad Agashe of Bangalore said that aerobiological studies had revealed that pollen grains of a large number of plants such as ricinus, carica, morus, ailanthus, pennizetum, cynodon, cassia, cyperus and amaranthus and several grasses produced pollens and cause allergic disorders in man.

CSO: 5000



## SURVEY OF NORTHEAST FOREST RESOURCES COMPLETED

New Delhi PATRIOT in English 3 Jan 81 p 5

[Text]

CALCUTTA, Jan 3—A survey of 50,000 sq. km of North-Eastern region, consisting of Nagaland, Manipur, Arunachal Pradesh, for forest resources has been completed by the Union Ministry of Agriculture and Irrigation.

In Nagaland the forest area is 17 per cent compared to 68 and 62 per cent in Manipur and Arunachal Pradesh respectively. The value of forest produce of this region, computed at the obtaining price in 1972-73, according to an estimate of the period was 38.27 million rupees. This was in the all India context, barely 3.1 per cent of the total but regionally, it indicates the vast scope of social and agro-forestry development in the region.

However, due to certain difficulties, the developmental activities in the region have been tardy. Apart from lack of survey and attention to the problems of the area in the past,

another hurdle has been the fragmented nature of the control over forest areas.

The North-Eastern Council has, in recent times shown initiative in resource surveys as well as in promoting forest-based industries. Its pre-investment surveys have been done in Manipur, Tripura and Meghalaya.

The survey on Manipur has established that more than 50 per cent of the total forest zone is covered with trees, while 22 per cent is bamboo groves and the rest open forests. Based on these factors the survey has recommended establishment of newsprint plant, plywood factories, integrated pulp and paper mills, saw mills etc.

The survey on Tripura has borne out the fact that the bamboo resources of the State would be more than enough to ensure a pulp and paper industry with a minimum daily production capacity of 300 tonnes.

CSO: 5000

## BRIEFS

PUBLIC WARNED OF SERIOUS POLLUTION--Increasing population and rapid industrial development during the past thirty years have helped boost environmental pollution here, according to a report by the Anti-Water Pollution Center of Taiwan Provincial Government. People living in crowded cities along the west coast in Taiwan have been continuously threatened by noise and water and air pollution. Improper arrangements after the exploration of natural resources, and random discharge of wasted materials are the major causes of the environmental pollution, the report pointed out. It said the population in Taiwan has rapidly increased in the past 30 years and the society has enlarged from town, city to metropolis. The economic structure has also shifted from agricultural into industrial economics. In the course of industrial development, natural resources have been further explored. As a result, natural balance has been upset at the same time. The report urged the authority concerned to immediately adopt measures to cope with the pollution. [Text] [Taipei, THE CHINA POST in English 10 Jan 81 p 12]

CSO: 5000

## SPRUCE BUDWORM, AIR POLLUTANTS ENDANGER CSR FORESTS

Prague RUDE PRAVO in Czech attachment HALO SOBOTA 29 Nov 80 pp 4, 5

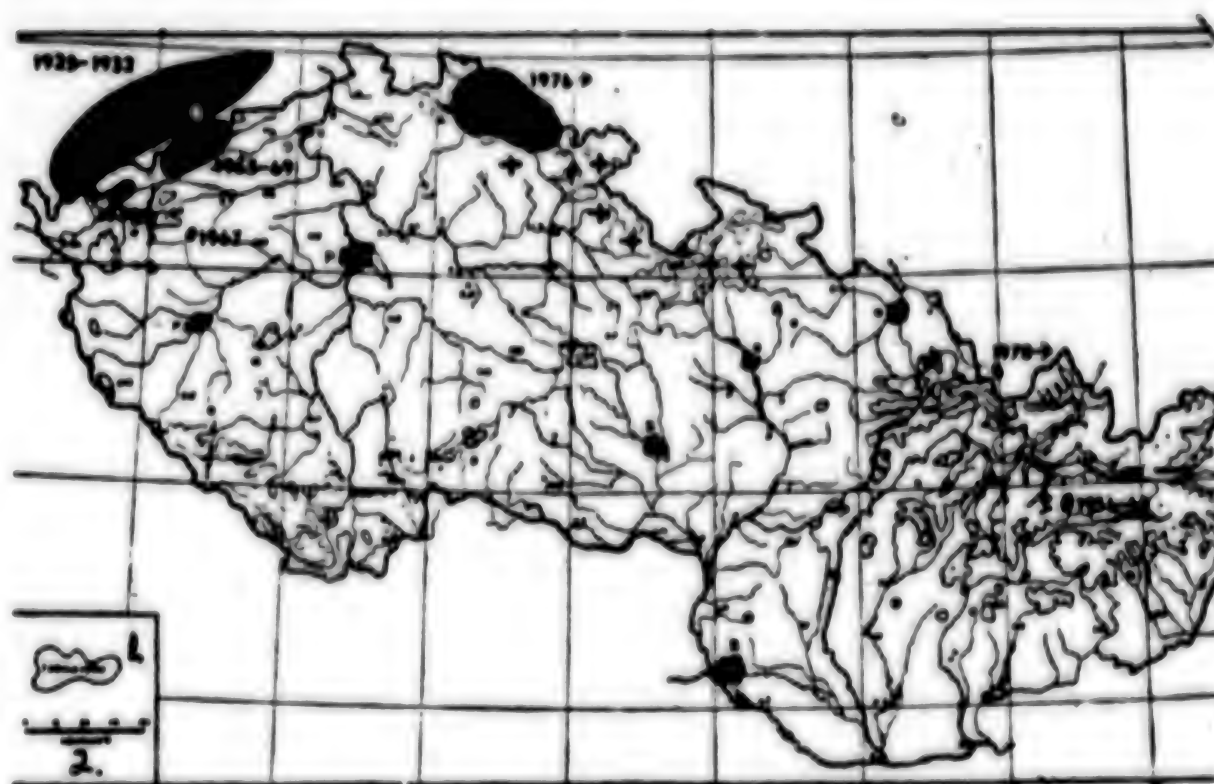
[Article by Dr Vaclav Skruhavy, candidate for doctor of science, Entomological Institute, Czechoslovak Academy of Sciences, Prague, "The Problem of the Spruce Budworm"]

[Text] Rarely does an insect pest awaken such public interest as has the spruce budworm which has appeared in the Jizery and Krkonose mountains. This attention was in part due to an aerial extermination project called Project Moth 1980. We will, nevertheless, hear about the spruce budworm next year as well; so let us take a closer look at the problem posed by this pest. Let us begin with the question of why a spruce budworm harms spruce trees.

The caterpillars of the spruce budworm live in several types of trees in Europe and Asia. Throughout the Alps they are present on larch and Swiss pine, while in Central Europe and Scotland they attack the forest pine. In Siberia they are known for the damage they wreak on the Siberian larch, and in the Far East for their damage to the Dahursky larch.

In Central Europe, the spruce budworm lives in its so-called latent period (i.e., a period of infrequent appearance, when it does no damage) probably almost everywhere at higher elevations. Since 1925 it has multiplied a total of 4 times on our territory and we are now witnesses to its fifth calamitous invasion of northwestern Bohemia and its sixth appearance in the Krusne mountains (see the map). The question of whether we are dealing with one species, or with several, has yet to be satisfactorily resolved. To date no significant differences have been discovered (apart from slight variations in coloration) between butterflies and caterpillars originating in different host plants, which would justify us in establishing the existence of independent species. However, in recent years it has been discovered that the chemical substance, pheromone, by which the female attracts the male, is E-(11)-tetradecenylacetate in the population living in larches, whereas in the population living on the Swiss pine and spruce it is E-(9)-dodecenylacetate. For this reason we now speak of spruce budworm species which inhabit the spruce, larch, and pine.

Map. Locations of spruce budworm attacks on the territory of the CSR and neighboring territory of the German Democratic Republic and Poland. Dates indicate period of the attack. Crosses indicate areas where the spruce budworm was discovered in 1980 with the aid of pheromone traps.



#### Key:

1. 750 meters and higher
2. kilometers

#### Spread of the Spruce Budworm

In cooperation with the Research Institute of Forest and Wildlife Management and with the State Forest Administration, the Entomological Institute of the Czechoslovak Academy of Sciences is evaluating the incidence of spruce budworm with the aid of pheromone traps in all mountain areas of the CSR. These traps use pheromone produced by Dr Kalivoda of the Institute for Organic Chemistry and Biochemistry of the Czechoslovak Academy of Sciences. In addition to the areas of the Jizerske mountains and the Krkonose, and the affected areas near Horní Blatná in the Krusne mountains, the spruce budworm has also been discovered in the Zdar Highlands, near Nova Paka, in the Broumov Foces and the Orlicke mountains, in the Jeseník region and the Beskydy mountains. (see the map). This does not mean that it could cause damage in all of these areas. It will, however, be necessary to determine the incidence of eggs in areas where mature spruce budworms have appeared so as to obtain more precise data regarding the potential for harm.

#### It Is Not the Spruce Budworm in Every Case

We have often heard this year that the spruce budworm is also appearing in many locations in Bohemia, especially in central portions. Even the eleventh issue of the periodical ZAHRADKAR [GARDENER] carried this erroneous information. In this instance it was a case of damage to the spruces by the spruce sawfly [lygaeonematus

abietinus), which has multiplied during the past year in significant parts of the lower lying regions of Bohemia. The damage is caused by its larvae, which are called grubs to differentiate them from the caterpillar larvae of butterflies. The mature spruce sawfly is, to be accurate, a hymenopterous insect similar to a small wasp. The grubs of the spruce sawfly feed during May and at the beginning of June on newly appeared spruce shoots, especially in areas recently planted. One can view tree tops stripped completely bare in this manner in the Krc Woods near Prague, in Pruhonice, in the vicinity of Kostelec near the Cerny Forest, and in many other areas of Bohemia.

#### Spruce Budworm Damage

The caterpillars of the spruce budworm develop simultaneously with the appearance of spruce buds. The caterpillars crawl into the blossoming buds as they hatch from eggs and develop rapidly, molting 4 times and passing through 4 developmental stages, substantially destroying the needles which are just blossoming. In a month they grow into their fifth developmental level, in which they are 1.7 to 1.9 centimeters long and capable of devouring whole young branches. These budworms destroy only the shoots which have just appeared. An attack of budworms lasting 1 or 2 years poses no threat to a spruce. Only after 3 years of extensive feeding is there a significant loss of assimilative surface. Because budworm breeding on the spruce has not, to date, lasted more than 3 years, and at the most 4 years, at any single location, and in some years the new growth has not been completely stripped, there have not as yet been great losses even during the worst invasions in the Krusne mountains between 1924 and 1932.

The current overabundance of the spruce budworm presents, however, a different situation. Due to the influence of sulphur dioxide, fluorine, and chlorine, needles do not stay on the trees for 6 years, but only for 5. They are distributed on spruce branches in the following manner: the youngest needles account for 30 percent of the total, needles of the previous year for 35 percent, 3-year-old needles for 25 percent, and 4- and 5-year-old needles for 10 percent. Therefore the repeated loss of needles

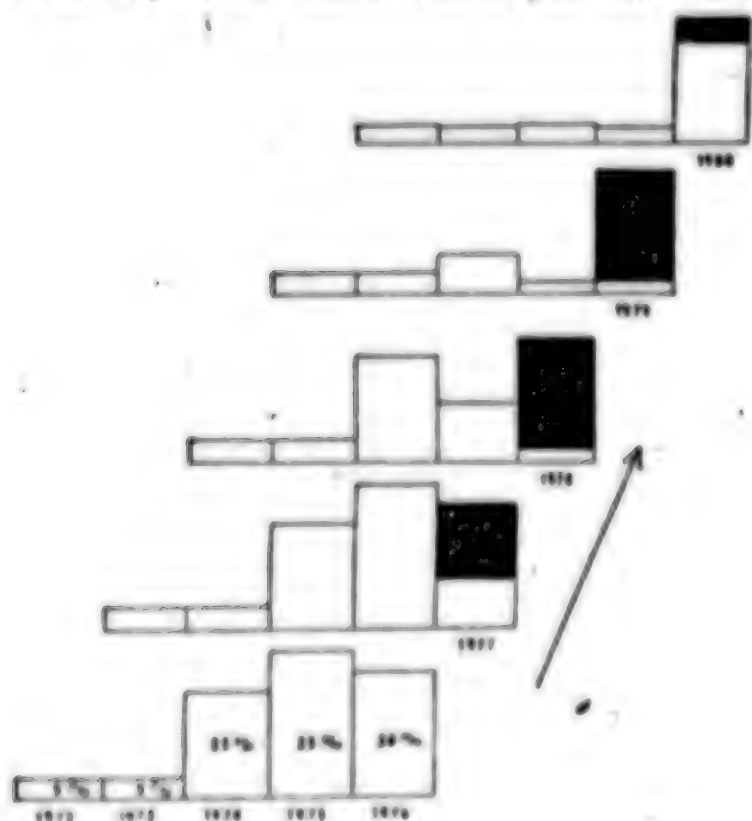


Figure 1: Schematic representation of needle volume on spruce branches from 1976 to 1980 in areas damaged by air pollution. Needle losses due to spruce budworm feeding are shown in black (see the text).



over several years can lead to the destruction of a stand of trees. Invasions of spruce budworms have been occurring more frequently, over shorter intervals, and are affecting regions already troubled by emissions. The spruce budworm is, that is, becoming the pest which is finishing off the damage caused to coniferous trees by air pollution. This is the root of the danger which the budworms currently present. If we were interested in making a comparison, we could say that the bud damage from budworms and air pollution on a stand of spruce is like a person ill with tuberculosis and a serious case of eczema. Even if the doctors are successful in curing the man's eczema, this does not mean that they will save him. The same is true of our threatened forests: liquidating the spruce budworm does not guarantee that we will save forests weakened by air pollution.

#### The Battle With the Spruce Budworm

Following the treatment in 1978 of about 1,200 hectares of affected forest in the Jizery mountains and 2,500 hectares in areas of northeastern Bohemia, neither of which operation had completely unambiguous results, the Ministry of Forest and Water Management made a decision in 1979 to treat, during 1980, for practical purposes the whole affected area, which covered 47,000 hectares. About 1,700 hectares of well known headwater territory was not treated. On the Polish side of the Krkonose mountains not quite a quarter of the 27,000 affected hectares was treated, the total amounting to about 6,400 hectares. The main reason for undertaking this extensive project was the fact that the forests in this area, especially in the central sections of the Jizery mountains and in the area of Harrachov, above Spindleruv Mlyn and near Malá Úpa, were in such critical condition that they may not have withstood a further decrease in assimilative surface from the expected feeding this year of the budworms. In such a situation every preserved needle has great value.

The condition of caterpillar development was brought under control, and the treatment of stands of trees conducted according to this. Teams were created to manage the whole project. The Ministry of Forest and Water Management, along with forest factories and flivair did everything to assure that the project would have a positive outcome. The project had at its disposal 7 helicopters, 12 AN 2 planes, and 6 cmelak ["Bumblebee"] aircraft. Actellic EC 50 preparations were used, as well as mixtures containing Actellic EC 50 and Ambush.

Caterpillar mortality ranged from 80 to 88 percent, according to estimates of employees of the Research Institute for Forest and Wildlife Management. In comparison with 1978, when the application of an identical solution saved 25 to 35 percent of the needles, which is the best indicator of the success of an application, this year about 50 percent of the needles were preserved. (less in the central sectors of the Jizery mountains) Even observation with the naked eye clearly perceives the difference between areas which have been treated and those which have not. However, under no circumstances may we overlook the influence of weather conditions, which this year exerted a negative influence on the development of the spruce budworms. The spruce needles and shoots grew more rapidly and the larvae which developed later could not find suitable food for themselves. The younger larvae would leave only partially eaten buds, crawl to other ones and even drop down from the crown of the tree searching for more suitable food. There was consequently a high mortality rate in the course of the lengthened larval development cycle which reached 38 to 50 percent by the middle of July, without chemical treatments.

A number of methods were used to observe the side effects of chemical spraying on the other components of the insect population of the spruce forests. Spraying significantly affected insects of the crowns of trees and shrubs, those in areas which have been cut over and replanted, and certain elements of the population of the soil surface and soil itself. Chemical spraying affected even a very beneficial insect, the tiny *Trichogramma embryophagum*, a parasite of spruce budworm eggs which serves in nature as an important control vehicle for curbing the high population of this pest.

#### Information in the Press Concerning the Spruce Budworm

It is clear that the public has had great interest this year in the problems related to the spruce budworm. Their destruction took place in June, when the Krkonoše and Jizery mountains are the frequent objectives of visitors and others seeking recreation. Those who came had to pay attention to instructions restricting their movements, because for a certain period of time access to the forest was denied. Almost every other day the daily press ran stories about the course of "Project Budworm," and the daily and the weekly press published a number of articles about this issue. Their level of sophistication greatly improved in comparison with 1979.

It is necessary to praise the responsible approach of those journalists who concerned themselves not only with the problem of the spruce budworm, but also pointed out the main reason for the unfavorable condition of our forests--air pollution and the pollution damage from sulphur dioxide, chlorine and fluorine--and who emphasized the necessity for limiting these harmful substances so as to improve the overall condition of our forests, one of the greatest treasures of our country. Perhaps it was precisely the appearance of the spruce budworm which showed how unstable the interrelationships are within forest communities, and how little it takes in such disturbed--"sick"--forests for the limit to be exceeded of what the forests are capable of tolerating and beyond which they are threatened with extinction.

#### Prognosis for Incidence of Spruce Budworm

It is difficult to forecast the weather for a few days in advance, and much more difficult to sketch a prognosis for a pest the development of which depends on a whole complex of conditions of the external environment, all of which are subject to significant fluctuations and changes. For instance, temperature conditions in May and June of 1979 were among the highest in the history of recording such figures in Bohemia, while those of July 1980 were among the lowest. At the same time, one must realize that every prognosis, no matter how thoroughly worked out, always remains pure supposition. On the basis of existing conditions it is possible to conclude that due to the presence of a significant supply of assimilation surface, the forests are not threatened with immediate damage. Each additional spraying project for an extensive area must be carefully considered. According to a prediction developed over the winter months at the Research Institute for Forest and Wildlife Management, it will be necessary to consider the spraying of several thousand acres of forest area because of a high concentration of eggs.

Over the longer term we must resolve the issue of the economic battle with forest pests by shifting from high volume to low volume sprays, meaning that instead of 100 liters of water and insecticide, only the insecticide combined with the same amount of some minimally harmful adhesive approved by health services will be used. It is

also necessary to outfit our aircraft resources with the necessary equipment to undertake such projects. All of this is necessary for the further reason that there is a growing danger of the overpopulation of another forest pest, the *lymantria monacha*. It is not out of the question that the gigantic calamity caused in northern Poland by the *lymantria monacha* where it attacked 1.0 million hectares of pine forest, could expand and threaten our forests as well.

#### To Preserve Our Forests

It would be a mistake to think that everything has been done to preserve the forests of the Krkonose and Jizery mountains with the end of this year's project against the spruce budworm and the statement that these forests are again green. "Project Budworm" should be only a part of a complex of measures which would help to slow down or partially defeat the dangers now threatening our forests. This system of measures may be divided into three areas: 1. efforts to eliminate the main cause--air pollution; 2. A set of measures related to husbandry; 3. A set of research measures.

1. Eliminating the main causes of air pollution is the most important prerequisite for recuperation of the countryside. Introduction of effective air pollution traps in industrial operations could substantially improve the entire situation. Since the air pollution sources arrive both from our country and abroad, it is necessary to handle the situation on a Czechoslovak and international scale, negotiating for reduction of polluting emissions to the lowest possible amount. Of equal importance to our industry is to be capable of manufacturing its products and fulfilling its tasks economically and with the lowest possible consumption of energy. Every faulty product, every excess kilowatt hour, contributes to a further decline in the condition of our forest and environment as a whole.

2. Today we are still paying for the fact that 100 to 150 years ago our original mixed mountain stands of trees were replaced with spruce monocultures. It is necessary to return to the original composition of the forests to the extent that this is still at all possible. We must preserve all deciduous trees in areas threatened by air pollution, and systematically prepare solutions with a long lead time for eliminating the unfavorable causes threatening our forests. When matters have already led to perceptible damage, then it is usually too late for preservation.

3. It is essential to make use of all scientific findings and to create comprehensive teams made up of physicists, chemists, meteorologists, biologists, technicians, and water management specialists to consider the question of the preservation of our forests from various viewpoints. Through the joint efforts of all responsible employees, and from each of us as individuals, we should be able to see to it that the pines continue rustling on our homeland's rock formations.

9276

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## DANGER SEEN IN SILTING-UP OF LUANDA BAY

Luanda JORNAL DE ANGOLA in Portuguese 27 Dec 80 p 2

[Article by Ocirema]

[Excerpt] The residents of Luanda are sadly witnessing the disappearance of one of their best-loved city legacies: the bay.

It is true. The bay is slowly being swallowed-up by the strong tides which pull hundreds of tons of sand. The silting-up of the bay is also helped by poison: tons of sewage disgorged every day by the city's sewers.

The Luanda bay's agony is only being commented upon among friends, in chance encounters, and nothing is being done about it.

Often, a conversation starts with the case of the "mabanga" hunters. Today, they can position themselves in the middle of the bay, water reaching up only to their knees, without any trouble at all. One day, they will reach the port or the President Hotel just as easily.

Dredging the bay is no easy task. It entails the expenditure of some millions of kwanzas, and this is second to a series of investments which are considered more important. We have so many priorities; without the shadow of a doubt, the case of the Luanda bay is not among them.

Perhaps an association of friends of the city could organize a large fund-raising campaign to protect and salvage the bay. However, to achieve the dredging of the Luanda bay, participation by the state is indispensable.

This article is only aimed at alerting the residents of Luanda in order to protect an immense spectrum of picturesque sites and localities that are an integral part of the city's character.

Moreover, the establishment of citizens' associations at the national level could constitute a significant contribution to the country by assuming responsibility for the kind of undertakings that do not claim priority in themselves, but are still of public and national interest. The bay is dying: should we just witness its agony without extending a helping hand? I believe that is not right.

## RECENT PERIODIC LAKE RISES FORCE TOWN TO MOVE

Blantyre DAILY TIMES in English 5 Jan 81 p 1

[Text]

**KARONGA**  
Sunday**PLANS** are on the drawing board to move Karonga boma to a new site about three miles south of the present location which is opposite Ipyana Model Primary School.

His Excellency the Life President, Ngwazi Dr. H. Kamuzu Banda, approved of the move last year.

Feasibility studies relating to the future development of Karonga township which are already in the process, would be followed in more details by civil engineers shortly.

"By March 1981, we should know where we stand," according to Dr. Herbert Neuland, a senior hydrologist from Gtsc in West Germany, who visited the district recently.

Dr. Neuland said his findings on the behaviour of the lake gathered from the elderly people he met during his meetings with them would be presented to Gtsc for further analysis along with other data collected from some Lakeshore districts.

The information collected would assist Gtsc to determine what next course to take, Dr. Neuland added.

There have been periodic rises of the lake level in the past. Mr. J. Mwambima of Kafikisila Village briefed the meeting.

"But the recent rises of the lake, beginning around

mid-1970, have been more constant, persistent and damaging," added the 73-year old Mwambima.

It is this behaviour of the lake, whose causes have yet to be determined, that has drawn the attention of the Government to plan moving the district's administrative centre to a new higher site covering an area bordered by Karonga Airport Road to the north and Phapa stream to the south.

The new site which is about 1,700 metres above sea level overlooks the lake and thus assured of continued Lakeshore breeze and wonderful view.

It is located on an undulating topography making the area more ideal for future development of the township than the present site, according to planners.

By mid-next year a definite image of the new township's features should have emerged from the present given data, Dr. Neuland said.

The site, according to an official of the Town Planning Department, was chosen by chiefs and other local leaders in the district.

Karonga boma was established towards the end of the 19th century and since independence, the

boma has experienced tremendous development.

The present site of the boma offices was built around 1970 and was chosen after the old offices, now being occupied by the Karonga District Council, were threatened by the rise of the lake.

Also for similar reasons of flooding, the Church of the Central African Presbyterian (CCAP) of Karonga moved its mission from the old site near the lake to Bwiba, about six miles west of Karonga boma.

With a population of nearly 12,000 Karonga boma ranks second to Muxu in the Northern Region and fifth in the country in urban population.

The boma is well served with air, road and lake services.

It is rapidly expanding with Karonga Agricultural Development Division (KADD) spearheading the agricultural industry which has attracted the rise of a milling industry.

There are also other public as well as private commercial enterprises such as banking and other Malawian-owned businesses as well as the ESCOM-supplied electricity. —MANA

## PREPARATIONS UNDERWAY FOR TREE PLANTING

Blantyre DAILY TIMES in English 19 Jan 81 p 3

[Text] ZOMBA  
Sunday

PREPARATIONS for the National Tree Planting Day in the Southern Region are well underway. As usual, Party leaders will officiate at the functions.

In Nsanje, 34 schools have been selected for the day. According to the programme, the Member of Parliament for Nsanje Centre, Mrs. Grace Chijona will be at Fatima Girls' School and the Nominated Member of Parliament from Nsanje North, Mr. Bester Kaitano will be at Fatima Boys' School in T.A. Mlolo's area. The Member of Parliament for Nsanje South, Mr. Standford Dembe will be at Nsanje Correspondence Centre while the District Chairman of the Party, Mr. Dembe Zambezi will officiate at the District's Secondary School. The Chairman of the League of Malawi Women, Mrs. Elnati Joe will be at Nsanje Full Primary School.

Of the total 2,252 trees planted last year, 1,285 have so far survived in Nsanje. About 6,000 trees are expected to be planted in this year's programme.

The programme in Mangochi began with 37 schools against a total of 2,434 trees in 1976. The number of schools has since increased to 63 this year with about 10,000 projected trees for this year. The district has since planted 35,000 trees since the inauguration of the NTPD five years ago.

In Machinga, 21 institutions are involved to plant 4,200 seedlings next Wednesday. The Minister Without Portfolio, Secretary-General and Administrative Secretary of the Party, Mr. Bakili Muluzi will be among Party leaders who will officiate at the ceremonies there.

So far, 11,000 trees have been planted since the programme started in Machinga District.

Mwanza District will have 24 centres for NTPD against 4,800 trees. So far, 14,066 trees have survived out of 17,041 planted in the district since 1976. Of those which survived 6,919 are bluegum, 6,056 gmelina, 701 pines and 390 casia.

Thyolo has more than seventy centres for the NTPD which have already raised seedlings given to them by the Forestry Department. 8,735 of eucalyptus and gmelina trees were planted last year at 58 institutions.

In Zomba, 42 centres will receive a total of 8,400 seedlings of eucalyptus and gmelina trees for the exercise. Of the 8,629 similar species planted last year, 7,474 have survived.

The programme which started with only four primary schools in Chiradzulu District has expanded to include 35 institutions, and to date 16,993 trees have survived out of a total of 21,777 since the programme was launched in 1976.

Mulanje has 40 centres and the Forestry Department there has

prepared 214,000 seedlings for planting this year.

In Chikwawa, 3,000 seedlings are already to be transplanted at various centres in the district where the NTPD will be observed.

By 1979, well over 190,779 seedlings had been distributed to 272 primary and secondary schools in the region for Blantyre.

Well over 190,779 trees have been planted by students from 272 primary and secondary schools and colleges in the Southern Region during the past four years, since 1976.

Statistics released by the Regional Forestry in Limbe, show that Blantyre District with 33,000 trees, planted the highest number of trees during that period, with Thyolo and Chiradzulu districts taking the second and third places at 26,835 and 24,000 trees respectively.

Eucalyptus, gmelina, cassia, khaya nyasica and pine are the species that have been distributed for planting depending upon the soil and weather conditions in each district.

According to statistics, a 65-per-cent survival rate has been realised on a regional level.

During the National Tree Planting Day, set for January 21 here in Malawi, people throughout the country follow the advice of His Excellency the Life President, Ngwazi Dr. H. Kamuzu

Banda, for every individual to plant a few trees each year.

Machinga District, with 21,000 trees, came fourth while Zomba, with 18,946 trees, planted at 18 institutions, came fifth. Mwanza, with 17,705 trees, planted at 22 institutions,

came sixth while Mulanje District, with 16,979 trees, planted at 34 institutions gained the seventh place.

Mangochi, with 12,745 trees, planted at 22 institutions, Chikwawa, with 8,903 trees, planted at 18 institutions and Nsanje with

8,686 trees, planted at 24 institutions; took the eighth, ninth and tenth places respectively.

According to statistics, it was not possible for the officials of the Forestry Department to account for every tree planted in some of the districts. —MANA

CSO: 5000

# KADUNA GOVERNOR SHOWS CONCERN OVER DEFORESTATION

Kaduna NEW NIGERIAN in English 21 Jan 81 p 16

[Article by Mike Reis]

[Text]

DEFORESTATION of the country will continue unless alternative energy sources like crude oil and natural gas are developed to replace domestic use of firewood.

This assertion was made by Governor Abdukhadir Balarabe Musa of Kaduna State while addressing a meeting of the National Forestry Development and National Wildlife Conservation Committees at the Murtala Mohammed Square yesterday. The address was read on his behalf by the Permanent Secretary, Ministry of Animal and Forest Resources, Adaji Abubakar Ladan.

The governor lamented at the alarming rate at which trees were chopped down for domestic use leaving the land open to desert activities.

He said that desert encroachment, threatening the northern part of the country should be regarded as a national disaster which required a national emergency measures.

Governor Musa said it is sad to note that the country now use part of its foreign exchange on

importation of timber which was, at one time, our major export.

In his effort to combat desert encroachment in the state, Governor Musa said a total of five million seedlings were distributed to farmers in rural areas for planting. He said an afforestation campaign was also launched with the aim of making the natural environment of the state richer and more habitable for all.

On wildlife conservation, Governor Musa said the Federal Government, as signatory to the Wildlife Conservation Agreement, must develop wildlife sanctuaries in such a manner as to make them suitable to serve the purposes of conservation and tourism.

Also speaking on the occasion, the Federal Director of Forestry, Mr. A.M. Oguni, enumerated the Federal Government's effort to make the country self-sufficient in wood and wood products.

He said during the Fourth National Development Plan, the Federal Government hopes to establish large-scale industrial and multi-purpose forest plantations in addition to protecting the existing forest lands.

## BRIEFS

DROUGHT MAY CAUSE MIGRATION--The menace of drought which has affected some parts of Borno State this season may force many farmers in Fune Local Government Area to migrate to other places in search of livelihood. As a result the state government has been called upon to assist with the basic needs of human survival such as foodstuff. This was made known by a member responsible for finance and administration in the Local Government Caretaker Management Committee, Malam Garba Kokali, when the Commissioner for Agriculture, Mr. Jabani P. Mambula, made a familiarisation tour to the area. Malam Garba told the commissioner that almost half of the total farmlands in the area were hit by drought and this has caused serious problems to several people. Narrating the gravity of the situation, the Higher Agricultural Superintendent for the area, Malam Abdu Kollere Damagum, disclosed that food and cash crops such as millet, guinea corn, groundnuts, maize, cowpeas and cotton on an estimated farmland of over 50,000 hectares were affected. He outlined some of the problems facing the agricultural service division in the area which included motorcycle loans, settlement of claims and lack of staff quarters. The Zonal Irrigation Officer, Mr. Yohanna C. Mahelia, told the commissioner that plans were underway to develop lakes in the area for irrigation purposes, pointing out that such projects would take three years to be completed because of the technicalities involved. [Text] [Kaduna NEW NIGERIAN in English 14 Jan 81 p 17]

CSO: 3000

## PROTEST AGAINST DUMPING SLUDGE AT SEA GROWS

Johannesburg THE CITIZEN in English 23 Jan 81 p 11

[Text]

**DURBAN.** — Disclosures that Durban's sludge-in-the-sea experiment is already under way have resulted in a storm of protest and calls for an immediate City Council election on the issue.

In Pretoria, Dr K A Murray of the Department of Water Affairs said they were completely unaware of the experiment having started — although it was supposed to be under the control of a steering committee on which the department was represented.

Durban's Mayor, Mrs Sybil Rotz, announced on Wednesday night that the pumping of sewage sludge had been on the go since October. Yesterday she promised a City Council rethink on the controversial experiment if there were sufficient opposition at a public meeting on the subject to be held next month.

Mrs. Rotz said she had first heard the experiment was under way a few days ago during Council recess. Her disclosure was to clear up any existing confusion.

Of the public meeting called for February 24, she said: "We must have that meeting, very, very definitely."

**Prejudice**

The latest turn of events would in no way prejudice the meeting and if there was overwhelming opposition "then obviously it would have to go back to Council and we would have to take a second look."

Dr Murray, who is chief hydrologist for pollution control, said the pumping of sewage sludge was contrary to the agreement between the various bodies concerned.

Mr Keith van der Wet, chairman of Durban's bluff-based Anti-Rates Committee, yesterday called for an immediate Council election.

"I feel that it is imperative that an election is called right now ... It's obvious this city is being run by officials and not our elected representatives. It seems that they are usurping not only the authority of the Council, but also that of the Department of Water Affairs — and they are really only employees."

Mr Peter Mansfield, a member of the Council's Management Committee, said he would raise the matter urgently at yesterday's committee meeting.

"If the experiment has started all hell is going to break loose. The project has been handled badly from the

start, but this is total disaster.

"How dare the city engineer proceed before the public has been given a fair hearing and before a permit has been issued by the Department of Water Affairs."

Meanwhile, a Durban City Councillor, Mr Pieter Breytenbach, is organising a petition among his colleagues to force a Council meeting within a week.

A new councillor, Mr Neville Herrington, said he was taken by surprise.

"We are paying R10 000 to employ a firm of public relations consultants when we can't even accomplish basic, fundamental communications with the public."

He said he was not told about the experiment and knew of several other councillors who had not been told either, "and furthermore, the public was not told."

Mr W Orliff of the CSIR's National Institute for Water Research, which is under contract to monitor the experiment, said he was aware that the discharge of sewage had started last year.

A preliminary survey had been carried out prior to the starting of the experiment and one follow-up survey had already been made. — Sapa.



STORM HITS WESTERN CAPE, CAUSES DEATHS, EXTENSIVE DAMAGE

Rescue Operation Mounted

Johannesburg THE CITIZEN in English 27 Jan 81 pp 2, 3

[Article by Murray McNally]

[Excerpts] Cape Town.--The South African Defence Force yesterday launched a massive rescue operation to save hundreds of people marooned in the flood-devastated southern Karoo.

The flood, the worst in living memory, may have claimed more than 100 lives.

A Defence Force spokesman described the trail of destruction left by the raging waters as "too terrible for words".

Troops and equipment from most of the units in the Western Province Command were on standby round the clock, the spokesman said.

Supplies have been air-lifted by helicopter to the stricken area.

A convoy of trucks is on its way from Oudtshoorn with supplies for more than 500 families left homeless in Laingsburg.

Two thirds of Laingsburg was reported to be under water with many houses washed away.

Damage

Flooding at Ladisraith has caused millions of rands worth of damage," reports Sapa's correspondent, who said the Buffels River came down in waves after 150 mm of rain.

Some farms have apparently simply disappeared.

A report from Albertinia says a Soekor helicopter was used to rescue people who had been trapped in trees and on roof tops on a farm.

The Gouritz River, which is fed by the Buffels River, is at its highest level this century, sweeping away hundreds of animals and trees.



Flooding has caused millions of rands damage to grape harvests and fruit crops in the Western Cape. Boland grape vines have been particularly hard hit and there are fears that some of the vines will be infected by potentially widespreading fungus diseases.

### 'Black' Southeaster Blamed

Johannesburg THE CITIZEN in English 27 Jan 81 p 3

[Text] Cape Town.--The driving rains and disastrous floods that hit the southern Cape on Sunday were caused by a "black" South-easter that came in from the sea, not to be confused with the usual Cape Town south-easter, which is dry and warm.

The black south-easter is cloudy and wet--providing light relief for some in the way of gentle falls while spelling disaster for others by floods.

Sunday's black south-easter started with a low pressure over the central Karoo and a high pressure spreading over the south Atlantic.

There was a clockwise movement in the low pressure area in the interior and an anti-clockwise movement in the high pressure region over the ocean.

The sea air finally reached the coast bearing its humid air from the ocean and moved around the coastline.

This clockwise circulation in the low pressure area caused a build-up of humidity over the interior and clouds develop at various altitudes.

The clouds brought heavy rains, showers and thundershowers.--Sapa.

CSO: 5000

# LACK OF AUTO EMISSION CONTROLS NOTED

Yerevan KOMMUNIST in Russian 19 Oct 80 p 3

[Article by I. Mil'grom, "An Operation Has Been Performed. But the Disease?"]

[Text] Physicians, as is well known, persistently recommend physical exercise; we should walk more. And at home we should not forget to open the window a bit at any time of year. But it is even better, especially on a fine day, to throw open the window and take a deep breath of cool bracing air.

But by no means every Yerevan resident can take advantage of the doctors' good advice. And this is also well known to everyone. The reason lies in harmful auto emissions which frequently exceed the maximum norms.

How can the quality of the city's air be improved? Production units which pollute the air are equipped with treatment facilities and equipment or they are transferred outside the city limits. Or, if necessary, they are closed, as was done with the carbide furnaces at the plant imeni Kirov. But how do matters stand with auto enterprises and owners of personal cars?

In early August of this year KOMMUNIST reported to its readers that the ispolkom of the Yerevan City Soviet had adopted a decision to carry out operation "Clean Air" in order to extend the scope of this work and, of course, to increase the results. The operation was headed by employees from the environmental protection department of the gorispolkom, by its transport board and the state auto inspectorate. They visited major auto enterprises, where they carried out a selective inspection of the technical state of vehicles, and they concerned themselves with the concrete steps which were being taken to reduce the toxicity of exhaust gases. Nor did they ignore private cars.

The editorial board decided to return to operation "Clean Air" to report on the results. S. Akopyan, first lieutenant in the militia, and an employee of the state auto inspectorate helped us in this matter.

With the usual wave of the hand he stops an Ikarus with the number 69-16 ARF on the number 32 route; a thick trail of exhaust extends behind the bus. The bus travels the following route: bus terminal, Lenin Prospect, Marx Street, Shaumyan Square, Nalbandyan Street, Oktemberyan Prospect... The bus belongs to

the No 1 bus fleet of the republic's Ministry of Automotive Transportation. The driver, Mamikon Arakelyan was obviously surprised by the meeting with the state auto inspector; after all, he had not confused a red light with a green one, the steering and brakes were in good order. As for exhaust gases, well that's something they should deal with at the garage.

Then there was a chat with Edik Bagiryan, the driver of a heavy freight MAZ. That day he was hauling panels from the Charbakhsk Plant No 7 for the Production of Reinforced Concrete Structures to a residential building which is being constructed not far from the diamond plant. The exhaust fumes from the vehicle reminded us of a dark cloud.

Senior lieutenant Akopyan explained the reasons for the vehicle's condition: it was filled with unsettled solar oil; it was possible that everything was not right with the diesel diffuser as well. From this came incomplete combustion of the fuel, causing pollution of the air. Or more accurately-- it was the consequence of negligence on the part of those who let the vehicle out of the garage.

Similar instances are common among the overwhelming majority of auto enterprises. The vehicles with excessively toxic exhaust gases included a taxi with license number 43-43-ADF, which belongs to the second taxi fleet; bus 31-70 ADK of auto fleet No 3, which runs on the Yerevan to Abovyan route; panel hauling truck license number 02-61 ARSH from the fifth garage of the Ministry of Construction Materials. And private cars--Volga's, Zhiguli's and Zaporozhets's, with emissions clearly visible even without special equipment. Suren Kocharyan, the owner of one of the cars, mentioned that it was not always possible to adjust the car or to fill up with the right kind of gas.

We must not fail to take into consideration the fact that Yerevan already has several tens of thousands of private cars. And as a result of irresponsibility on the part of owners who violate the rules concerning operation of a vehicle, many of these cars have excessively toxic exhaust gases.

In general there is no doubt that the operation has been performed, but the disease remains. And significant efforts are still needed to root it out.

We familiarized ourselves with the materials which were sent to the officials of the Yerevan City Soviet in connection with the completion of operation "Clean Air." These included inspections, the results of spot checks and observations. An analysis of these materials provides a basis for the assertion that the managers of a majority of the auto enterprises and their employees still do not understand fully how important and urgent the problem of improving air quality in Yerevan is.

Insufficient attention is still being given to the work of improving the technical facilities in the primary and secondary auto transportation units. There have been unacceptable delays in providing equipment to points which check the toxicity level of exhaust emissions. And in those places where these points have been established the necessary procedures have not been instituted. Here is an example. In the course of a recent check the employees of the state auto

Inspectorate discovered that 20 of their own vehicles were actively polluting the atmosphere. They were sent to the repair shops of the No 2 service station. Here they were issued certificates which said that "the necessary adjustment of the ignition system has been carried out and the toxic emission of CO is in line with the norms." However, a recheck revealed that there had been no adjustment.

Cars running on the wrong kind of gas for the particular engine cause significant damage to the environment. This is caused by poor monitoring of the work carried out by filling stations. The system for supplying nozzles, spark plugs and other parts to auto enterprises and service points is still not operating well.

All these questions require urgent resolution in accordance with the provisions of the Law Concerning Protection of the Air. And the ispolkom of the city soviet, at whose initiative the Clean Air operation was carried out, must provide the decisive word here. It is clear that every vehicle--regardless of ownership--which emits toxic gases and pollutes our city must be equated with a bacillus carrier, removed from the line and put into a garage.

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CSO: 5000

## ARMENIAN HEALTH OFFICIAL COMMENTS ON AIR POLLUTION

Yerevan KOMMUNIST in Russian 19 Oct 80 p 3

[Article by U. Pogonyan, deputy minister of health of the Armenian SSR: "The Air Is Being Protected"]

[Text] Injury to the public's health is the most terrible consequence of air pollution in cities. These facts have been the reason for the increased attention given to public health protection of the air, and they have made it possible to single out the medical aspect as the decisive one in this complex and multifaceted problem.

In the campaign against air pollution two main methodological approaches have developed at the present time. The first is the attempt to apply the best technological processes and measures which can be achieved at the current technical level to combat pollution. The second, which is called "air quality management," presumes the existence of standards for air quality; these standards are the basis for the implementation of measures to combat atmospheric pollution.

Soviet hygienists were the first in the world to work out the scientific concept of norms for harmful influences, and as long ago as the sixties the USSR was the only country in the world in which air quality norms or maximum permissible concentrations (MPC) had legal force.

The following criteria for the harmfulness of atmospheric pollutants have been formulated in the USSR:

A given concentration of substances in the air can be considered acceptable only if it does not exert a direct or indirect harmful or unpleasant effect on a person, if it does not reduce his ability to work or effect his mood.

Thus, the significance of public health norms is broader than just the prevention of illness among the public. Their purpose is to create the most comfortable conditions of life. This constitutes the principle difference between the approach taken in the USSR for establishing permissible concentrations and the methods used in other countries, where the basic criterion of harm caused by air pollution is considered to be the rate of illness among the public.

The law "Concerning Protection of the Air" not only calls for the air to be protected from industrial, transport and other pollutants encountered in everyday life but also stipulates that the air must be protected against undesirable influences of various kinds of physical phenomena, including noise and radiation from electromagnetic and other fields.

The clause concerning the establishment of norms for the maximum permissible emissions of polluting substances into the atmosphere and of harmful physical effects on it is significant and fundamental in nature. The law brings high standards of ecological discipline into our economic life. For this reason it is essential to accelerate the implementation of the measures stipulated by the government decree concerning the plant in Razdan in order to prevent the danger of further pollution in the picturesque valley of the Marmarik River, in the area of pioneer camps and sanatoria located in the "Valley of the Flowers" and Ankavan, as well as many settlements located in the central economic regions. The implementation of radical measures concerning the Alaverdi Mining and Metallurgical Combine constitutes an urgent problem; its solution is extremely important for the republic's environment. The Kirovankansk Chemical Plant imeni Al. Myasnikyan has accomplished a great deal but not enough to ensure the complete recovery of the resort city.

In order to prevent the environment of Yerevan and nearby settled areas from being polluted by harmful emissions, production effluent and solid wastes from the Nairit Scientific-Production Association a number of measures have been specified, and these have found reflection in the decrees of the national and the republic governments: improvement of production technology, construction of a station to neutralize effluent and of facilities to burn solid wastes, etc. These measures are being carried out very slowly and not to the fullest measure. For example, even now the solid wastes from the association are being "neutralized" in the most primitive fashion by burning in the open within the Yerevan city limits, despite the fact that there exist modern methods which have been developed with consideration for the latest achievements in the area of thermal neutralization of solid wastes. The combustion of the wastes from enterprises is accompanied by the emission of harmful substances into the air over built up areas.

Restoring man's environment to health is in our age a process which is completely controllable.

The air has been taken under the protection of the state. The sky of our country must be clean. We are all responsible for this.

8543

CSO: 5000



# LENINGRAD EXPERIMENT WITH INDUSTRIAL WASTE DESCRIBED

Moscow SOVETSKAYA ROSSIYA in Russian 16 Oct 80 p 2

[Article by A. Kucher, Leningrad Oblast]

[Text] The press today often contains alarming reports from various countries concerning large accumulations of industrial wastes, which represent a serious danger to public health. What are the ways in which this problem can be solved? A ten year investigation carried out at a test site near Leningrad has proved that industrial waste dumps can be absolutely harmless.

The thick, velvety green grass in no way wished to give way to the cold breath of autumn. It covered the entire area of the "Krasnyy Bor" site with a great carpet.

"They 'buried' wastes here two years ago at a depth of three meters," said my companion, Aleksandr Pavlovich Titov, the main engineer of the test site, as he chewed a blade of grass." And, he added as if hitting the nail on the head, "forever."

The site, or polygon, is a Greek word which means a sector of dry land or sea equipped for the performance of tests of various types of arms, military and other types of equipment. But here, a few kilometers from the Kolpino suburb of Leningrad, tests of an absolutely peaceful kind are being carried out at the Krasnyy Bor site of the Spetsstrans Board. In the current battle for crystal clear rivers and lakes, for fragrant fields and meadows and for the rainy air, specialists are inventing and testing here new methods and equipment to neutralize industrial chemical wastes and the sludge from treatment facilities.

We are standing at the edge of the trench. Below, a black liquid has congealed, reflecting a sunny disc and clumps of cloud as in the basin of a mountain lake. A tank truck has approached. The driver let down a hose down into a trough and turned on the valve. The smooth, jelly-like surface foamed up. A few minutes later the engines of two more specialized vehicles were turned off. One of them belonged to the Plastpolimer Scientific Production Association. I inquired of the driver what he had brought. He answered, laughing at the same time: "Everything left over from Mendeleyev's Table. Just residue."

We expand: liquid industrial wastes and polluted organic impurities run together into this trench. Liquid fuel wastes, which cannot be regenerated, go into a

neighboring trench. A third takes only solid wastes and a fourth takes only strongly toxic substances. But why have this detailed classification of wastes which no one needs any more?

"What do you mean no one needs any more?" asks A.P. Titov instantly. "They are working for us now."

"Wastes are working for you?"

"Of course," says the main engineer as if slightly offended. "This site is a profitable enterprise. Through the use of new methods of neutralization we contribute 150,000 rubles to the state income every year."

Of course, this scale of operations was not arrived at all at once. Over a period of several years the staff members of the municipal public health and epidemiology station gathered all different kinds of data on wastes and the operation of treatment facilities. They calculated, classified and then the results of the studies were sent to the planners at the Leningrad Institute. . And they in turn set before the geologists of the Leningrad Comprehensive Geological Expedition the complex task of finding an "impermeable" and unsinkable area for the future dump. More than 100 wells were drilled in order to find at last a powerful stratum of water-resistant Cambrian clay covering an area of 50 hectares.

And then the bulldozer and excavator operators went to work. They dug a circular canal to isolate the ground and surface waters from the surrounding area. They constructed an embankment from packed clay. They dug out trenches, which were prepared to take tens of thousands of tons of dangerous, harmful wastes, both solid and liquid, by virtue of the "impenetrable" linings on the trench bottom.

Our country's first, and for now the only, site for centralized reception and neutralization of toxic chemical wastes opened up a "green street" for Spetstrans vehicles. There is a new destination in the drivers' route lists.

A significant amount of the wastes are now being neutralized by the latest methods and equipment. As a result, only one-third of the site area has been used during the last decade. The cost of processing wastes has been reduced by 25 percent per ton. A group of staff members, including A.P. Titov, L.V. Khrustalev, S. Ye. Krivega, L.A. Terekhov and V.M. Pavlov, has been awarded the USSR VDNKh gold and silver medals for the development and application of the cascade method of neutralizing harmful substances, in which wastes are neutralized by other wastes.

Today the chief engineer is having the rare working day which does not begin with telephone calls by workers at the site looking for tires. Any tires, from cars or trucks, tractors, airplanes or helicopters.

"They are dead weight for auto enterprises and airports, but for us they are valuable raw material," explains A.P. Tito. "At present we use them to neutralize liquid incombustible substances."



At first wastes of this kind were simply buried in the strata of Cambrian clay; when one pit became filled, they dug another one next to it. But, as you can see, they would have had to have build a new Krasnyy Bor in three or four years. How could the land be saved, how could space in the dump site be conserved? The answer was found in equipment for the thermal neutralization of liquid noncombustible wastes which was erected jointed with the State Institute for Applied Chemistry.

"But where is the installation?"

"Under your feet," answered Aleksandr Pavlovich.

There, under a layer of concrete slabs a 1,000-degree flame burns in the belly of a cyclone furnace. Wastes from fuel oil, kerosene and gasoline are burned here. And in this fiery purifier all the harmful substances are broken down into harmless products of combustion. And, as they say, two birds are killed with one stone. And with the second stone, two more, i.e., instead of clay, which sinks, the pits containing the remains of liquid wastes are now filled with wastes such as cement and cement dust. They remains have thickened up to such a degree they that they are holding firm the upper barrier, wthe strata of clay and earth.

But let us return to the cyclone furnace. Another problem arose--a shortage of a fuel mixture. And if worn rubber tires are used for this purpose? They tried it: it burned like gunpowder? As a result we have an installation which uses wastes to neutralize other wastes.

"But the site itself?" This was a question which was on my mind the entire time. But Aleksandr Pavlovich gave me an understanding smile and said:

"Does it not pollute the environment? No, this is no problem at all. The site is closely monitored by the oblast public health and epidemiology station, the Institute of the Earth's Crust of Leningrad University and by geologists. Samples of water, air and ground water are taken regularly from the surrounding area. But, in my opinion, nature gives the best answer.

A pine forest which gives off a resinous fragrance grows in a thick wall. And the high grass reaches up to the signs which say what was buried here and when.

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# MAJOR FLOOD IN L'VOVSKAYA OBLAST

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 8 Aug 80 p 4

[Article by Vitaliy Panov and Mikhail Serdyukov, Skolevskiy Rayon in L'vovskaya Oblast "When the Storks Return"]

[Text] There have been floods in the Carpathian Mountain area. As a result of the abundant rains, harmless streams have become rivers and rivers have become seas. Thousands of people have responded to the call to go fight this disaster. Our special correspondents, Vitaliy Panov and Mikhail Serdyukov, report from the flood area:

At the edge of the forest the deer slowed his pace. He cocked an ear to listen, extending his brown neck, and proudly shook his luxurious antlers with a branch. The forest rang out. Putting his head down, the animal began to drink water greedily. To achieve this he had merely to touch his tongue to the dark grass. The grass rustled. Brilliant streams ran down from the mountains. This was Tuesday morning...

And in the evening water raged at the foot of the mountains. The streams overflowed into seas. The water moved up toward the deer. Not towards the real ones: living in the mountains, they were relatively safe, but towards the carved ones, decorated in bright enamel and affixed to the houses next to the windows and doors: there is a popular belief in the Carpathian area that if a deer settles in your house, even a purely symbolic deer, it means that trouble will not enter the house.

But trouble did come into the homes. And the deer was powerless here.

A report about the actions of the Skolevskiy Rayon Department of Internal Affairs in eliminating the consequences of the flooding under difficult conditions yielded the following: "At 20:00 the staff of the rayon department raised the alarm. Two hours later an urgent report came into the duty room: water had submerged the site of the Cheremshina Tourist Camp and was threatening to destroy it. An operational group which included V. Osyk, a major in the militia and First Lieutenant I. Kindratishin, went out to the site. With their help 76 children were evacuated from the flood zone by morning and some of the Cheremshina Tourist Camp property was saved: the rest was washed away by water."

But in L'vov the sun was shining. It was such a lovely sun that we forget about raincoats. We had the sun with us for half the road. But then we entered the flood region.

The weather changed with cinematic speed. The sun was covered by clouds. And the wind blew armfuls of dust into our car. Usually twilight comes about nine o'clock in the evening here. We looked at our watches: it was 4:45. But the driver of our car, Ivan Chobit, looked ahead. Suddenly he said: "We're here," and put on the brakes. There was no more road.

In front of us there was a railroad bridge, which could no longer be called a bridge. The water had cut out of the bridge as if with a sharp edge a choice bit, the heart; it had played with this hunk of concrete and thrown it up in a powerful wave upon the bank.

The Stry River. The Stry sputtered and foamed, deluging anyone who dared to cross it. Having destroyed the road and the bridge, the river squeezed the village of Urich into a noose and pressed its against the mountains. Having piled up things, the Stry calmed down a bit, and we risked fording it.

In the village they reported to us that this is how all adults residents now proceed if they have to leave their homes for any reasons. Bread, vegetables and newspapers are being delivered by trucks. And they are collecting the milk. How else? Life continues. And, by the way, the kolkhoz herd has not suffered, and the milk yields are not falling.

At first it was necessary to get the equipment out. The garage is located right on the river bank. When it became clear that the Stry was going to overflow, the alarm was raised in the garage. Mikhail Kotsevich, brigade leader of the Komsomol Youth Tractor Brigade did not have to go from house to house collecting people late that night. Armed with lanterns (the electrical grid was out of order by this time), they collected at the garage. And they went to work immediately. At any minute the water might have consumed 32 tractors and 29 trucks. But the engines started up and the equipment was moved into the mountains.

But "moving" was not without danger. It was as slippery as an ice rink in the mountains. It was only possible to crawl along and the water had reached knee level in the garage already.

Mikhail Kotsevich drove the first tractor. He used powerful headlights to find the road, or rather to find where the road should have been. At the time it was simply an enormous and growing puddle.

He made his way through mud that was almost impassable. The others followed him.

By morning the rain had subsided. The tractor drivers were wet to the skin and dropping with fatigue. But no one left the garage until all the equipment had been moved to safe places.

A report from the Skolevskiy Rayon Department of Internal Affairs says: V. Suranovich, a militia lieutenant and a sectional inspector, displayed bravery,

courage and resourcefulness. While inspecting the river bank in the area of Slavsko and Dubino, he saw that water had washed away the concrete pillar of a 110-power line which was live. And there were builders working in the area. At the risk of his life the lieutenant guarded the area of danger and prevented human casualties.

The village of Yamel'nitsa is located in a flood plain at the foot of the Carpathian mountains. Vasilii Dzyura came here only recently, a half year ago at most. He worked as the director of rural school. He was recommended for a position as chairman of the rural soviet in the remote, mountainous Yamel'nitsa. People trusted Vasilii. They respected him in the village and greeted him from afar, but Vasilii saw grins. People, it seems, were whispering: "The 'head' is young, only about 25. Can one expect wisdom in decisions and decisiveness in action from one so young?" Both are essential in the mountains.

The thunder woke Vasilii up that night. He tried to turn on the light. The light did not go on.

Every village in the Carpathians has its own "stream," with clean, cold water which runs through the streets. This is convenient and beautiful. The residents of Yamel'nitsa proudly named their stream the Yamel'nichka River. But during these days the usually peaceful stream turned into a roaring torrent, thundered with stones and washed away the banks, tore out reinforced concrete bridges, destroyed kilometers of road and left piles of rocks and roots.

Dzyura hardly slept during the flood. At first the village residents attempted to protect the post office, school, medical point and road with a barricade of Carpathian pines. The water cast aside the massive trunks like matches. The school playground was washed away.

It was during these days that Vasilii came to understand what kind of people he was now living with, and in what kind of friendly village he was now representing Soviet authority. People forgot about personal matters. There is no sin in admitting that in ordinary times people do not always organize themselves to fix the bridge. But when the floods came people felt that this is our bridge, our road, our school and our post office. And they spared no effort to save them. When Pavel Vasil'yevich Gnatishin, the head of the postal department, learned that water had reached his personal plot, he and others were in the middle of building a wall to keep the water away from the post office building. He thought for a minute, gestured with his hand and remained. Anyone who knows what the personal plot means in the life of a rural resident values this action highly.

Within the area of the village soviet, which was cut off from the "mainland," there were several farms to which people had come to work from other villages. Hundreds of cows were mooing anxiously, unfed and unmilked. The old and the young, school children and pensioners, took responsibility for them. And they managed: they got the feed, did the chores and milked the cows. No one had to persuade people. On the contrary, they had to be restrained and protected.

From the report of the Skolevskiy Rayon Department of Internal Affairs: "At the same time we report that in the fight against the flood the uniforms of sectional inspectors V. Lastovetskiy and V. Krasikov were ruined, Lastovetskiy also lost a cow which drowned."

For three days they fought the water. Without sleep or rest, without hot food or dry clothing. On the fourth day people were struck dumb with the penetrating quiet of the morning. The rain had stopped. Looking at the sky, which was not completely friendly yet, people saw white birds. The storks were returning to their nests.

8543

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## DENMARK

### ENVIRONMENT AGENCY REPORT WARNS OF CADMIUM PROBLEM

Copenhagen INFORMATION in Danish 19 Dec 80 p 8

[Article by Henning Schroll, assistant professor of ecology, Roskilde University Center]

[Excerpt] Between 1,000 and 30,000 Danes are exposed to such big quantities of cadmium that the normal function of their kidneys is affected. In the fields, the cadmium content is increasing each year, and it is possible to calculate the amount of cadmium which the basic foodstuffs will come to contain. In 100 years, approximately 200,000 Danes will have reduced kidney functions on account of the heavy alloy of cadmium.

The prospects contained in the new report on cadmium by the Environment Agency, stating the use, occurrence and harmful effects of cadmium in Denmark, are alarming. The report recommends that the state intervene in the area because the use of cadmium has proved to be widespread in production and because the harmful effects are immeasurable. The authorities ought to have become suspicious about the consumption of cadmium many years ago.

In Japan, some symptoms of cadmium poisoning appeared around 1920, and the pathological picture was referred to as ITAIITAI. These people suffered from severe pain, their kidneys became damaged, and their bones underwent disabling changes. For many years, the cause of this pathological picture was the subject of much dispute, and only in 1960 did Japanese physicians demonstrate that cadmium was the cause, or at least the provoking factor, of these people's disorders.

Common to the cases of poisoning was the fact that it was a question of peasants who lived on rice. The water of the river that was used for irrigating the paddy fields contained large amounts of heavy alloy. A copper, lead and zinc mine located higher up the river discharged its waste products direct into the river. As zinc and cadmium are always found in the same ore, the quantities of cadmium contained in the river water and in the rice were large. Many peasants died, and their bones proved to contain very high concentrations of cadmium.



## How Dangerous Is Cadmium?

But better late than never. Twenty years after the occurrence of cadmium poisoning in Japan, it has been attempted in Denmark to make a survey of the use of cadmium, and it is my feeling that the result is a good report, which contains a lot of information on cadmium in the Danish ecosystem.

### Cause for Concern.

There are good reasons to be concerned with regard to cadmium. The average 50-year-old Dane today has a cadmium content in his renal cortex which is approximately one fifth of the value which is considered to result in health problems. This is an average figure, so, taking into account individual differences in the absorption of cadmium, it may be estimated that more than 1,000 Danes are today suffering from adverse effects on their kidneys.

Or, in other words, do you eat many vegetables, grain products, organ meats and mussels? Do you live in an area where the drinking water contains large amounts of cadmium (released from galvanized water supply pipes)? Are you using pottery and plastics in yellow, red and green colors? Do you smoke? Are you working within the metal industries, the plastics industry or in an automobile paint shop, and so forth. If so, you are very likely to deviate from the average Dane and to contract kidney disorders.

### Cadmium in Lego

Cadmium is used in many areas in production, approximately 57 tons are used each year. The most important uses are indicated quantitatively in the report. Cadmium is used for surface treatment of metals, for example iron and steel, and cadmium is used in alloys. Many clear colors, fast to light, in yellow, orange, red and reddish-brown consist of pigments which contain cadmium. There is cadmium in Lego, in kitchen utensils, beer cases, automobile paints.

Calculators and photographic equipment contain nickel-cadmium batteries.

In order for PVC plastics not to decompose when subject to the influence of the ultraviolet rays of the sun, cadmium is used as stabilizer in plastics, for example for floor coverings, artificial leather, shoe soles, and window mouldings.

All of these uses and many more are clearly based on technological and economic considerations, that is to say, unless these circumstances change, the cadmium consumption will not change. In matters concerning heavy alloy pollution, it is traditional for the Environment Agency to seek voluntary agreements with the industries on limitations in the consumption. Against this background, it becomes a matter of primary importance for the Environment Agency to find out what the alternatives are to the use of cadmium.

The report seeks everywhere to evaluate the possible technological alternatives to the use of cadmium.

## Inadequate Measures of Intervention

However, due to the method used in calculating the cadmium consumption, an insufficient basis for intervention has been provided. With the poisonous substance as the point of departure, it easily becomes a goal in itself to cut the consumption. In the case of certain uses of PVC plastics, cadmium may be replaced by a tin stabilizer, but it is a short respite, for tin may very well prove to cause another heavy alloy pollution problem. A necessary control of the production to reduce the harmful effects must take place on the basis of an overall consideration. The evaluation must deal with the reason for making the window mouldings of PVC plastic and not whether cadmium or a tin stabilizer must be used in the plastic.

### Cadmium of Superfos

Another example of this grotesque situation into which the authorities will get when the intervention takes place on a too narrow basis is Superfos at the Little Belt [between Jutland and Funen]. Superfos annually discharges 600 kilos of cadmium into the Little Belt but has now been told that this cannot go on. The solution which the said enterprise wants to carry through is, according to Per Eichner, M. Eng., Superfos Inc., to separate cadmium from the waste water through a neutralization process, and to recirculate the precipitated cadmium for fertilizer production. The result of this form of reuse is that the cadmium which today is being discharged into the Little Belt, will instead be put into the fields with the fertilizer.

One of the major problems in connection with cadmium is that it is found in big amounts in phosphate fertilizers for agricultural purposes. Cadmium is found naturally in phosphate rock but in varying quantities. Until the end of the seventies, Superfos used great amounts of raw phosphate, which had a very low content of cadmium, but, because of lower prices, the company chose another raw phosphate supplier. This resulted in large-scale pollution of the Little Belt, and 8 tons of cadmium spread over the Danish agricultural area. This is equivalent to 3 grams of cadmium annually per hectare [about 2 1/2 acres] in addition to the 660 grams already found on the farm land. Cadmium is readily absorbed in plants, and even if the increase is 'only' 0.8 percent annually, the threat to the quality of the foodstuffs is obvious.

### Where Does the Damage Take Place?

There are other sources of the cadmium content in the fields. Sludge from purification plants is emptied into the fields on account of its fertilizer value, but a good deal of cadmium may be contained in the sludge, especially from the burning of waste products, and plastics provide an indirect contribution to the content of cadmium in the fields.

The report includes many calculations of averages for the cadmium content in the fields, and the objective of the report may, in general, be said to be to indicate the total amount of cadmium in the Danish ecosystem. The weakness of the method of analysis employed is that the result invariably becomes far

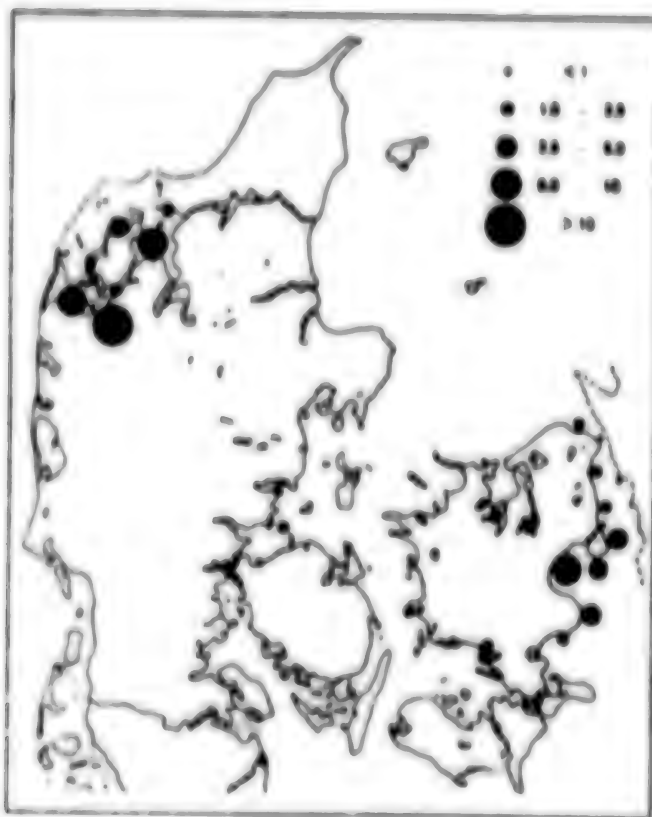


too rough to reveal the potential and actual harmful effects of cadmium. In my opinion, it would have been better to make a rough estimate of the use and presence of cadmium and then, for the rest, concentrate the efforts on areas where the risks are greatest. The calculation of the average content of cadmium in the fields fails to take into account the actual variations in the use of fertilizers, depending on soil conditions, the fact that waste water sludge with a high content of cadmium is found and used in certain areas, and the fact that certain areas are subject to particularly high rates of air pollution, and so forth.

#### Common Mussels

The same things hold true in the case of the water ecosystems, in that it is felt that cadmium does not constitute any particularly great problem. Approximately 800 kilos of cadmium are released by the industries, and Superfos accounts for 600 kilos of this quantity. If all the cadmium were distributed evenly, the problem might be tolerable, but that, of course, is not the case. If common mussels are used as an indicator, as appears from the map shown in this article, there are several areas in which common mussels should not be included in the everyday diet. In the Little Belt, into which large amounts of cadmium are emptied, the content of cadmium in common mussels is lower. There is an extremely strong current in that area, and the pollution there is of a more recent date. If one pours things into a big pot, it will take some time to fill it, but one day it will be full. I nevertheless feel that the report in question is an important one on which a number of studies of the most potential occurrence of harmful effects caused by cadmium may be based. The report, moreover, may contribute to a more detailed analysis of the various sectors of industry which constitute a particularly great risk to the environment, with a view to an overall evaluation of the technology and harmful effects of the industrial sectors concerned as well as the utility value of the commodities concerned.

Report. Cadmium pollution. A report on the use, occurrence and harmful effects of cadmium in Denmark. October 1980. Department of the Environment.



CAPTION

In certain parts of the country, the common mussel contains large amounts of cadmium, here indicated in mg/kg net weight when dry of soft parts.

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# REPORT SAYS HELSINKI WATERS CLEANER, FISH MAY BE EATEN

Helsinki HELSINGIN SANOMAT in Finnish 14 Dec 80 p 10

[Article: "Vantaa River Fish Suitable for Eating, Situation Definitely Better Than in Beginning of 1970's"]

[Text] Fish suitable for human consumption can now be caught from the central and lower reaches of the Vantaa River. It is calculated that there are approximately 20 such species of fish. The most common species are pike, bream, dace, and perch. According to the report the quality of the water and the suitability of the fish for consumption in the Vantaa River have definitely improved since the beginning of the 1970's.

The studies on the fish in the Vantaa River were conducted in the Helsinki Water District as a result of a request by the cities of Riihimäki and Hyvinkää and the municipality of Nurmijärvi for permission to continue to dump waste water into the Vantaa River system.

The area covered by the report includes the Vantaa River along with its tributaries.

## Upper Tributary of Poor Quality

In the report it states that the Vantaa River system is a typical river system for a shoreline area with few lakes, for which cloudy water and changes in its flow are characteristic under natural conditions. A large amount of waste water will definitely pollute this type of water system.

The upper tributary of the Vantaa River all the way to the Kytä River is according to the study badly polluted and fish are not able to survive in it. The water is otherwise unsuitable for use.

From Hyvinkää to the Nukari rapids near Nurmijärvi the species of fish is primarily comprised of cyprinoid fish and the quality of the water is tolerable. Sufficient numbers of cyprinoid fish can also be found in the Palo and Luhta rivers.

The rapids at Nukari improve the oxygen level of the Vantaa River to such a degree that the species of fish in the central portion of the river is diverse and sufficient.

The mouth of the river is beginning to become satisfactory and even good with respect to water quality.

### Underfished Basin

In the report it is considered that the Vantaa River basin is definitely underfished even though fishing for recreational and home needs is in places quite heavy along the central and lower reaches of the river. The total annual catch is approximately 10,000 kilos.

The most commonly caught fish are pike, bream, dace, and perch. The proportion of pike in the total catch is around 80 percent. Dace is found throughout the whole basin since it is able to tolerate large amounts of waste water.

The clean water creeks along the Vantaa River act as nurseries for various types of fish according to the report. Salmon can also be found.

It is estimated that approximately 1,000 people fish in this area with hook and line and approximately 200 people catch fish as an occupation.

### Slight Changes In Taste

Fish caught in the central and lower regions of the river are in general suitable for consumption, but there are slight changes in smell and taste according to the study. According to a journal kept by local fishermen only 10 out of approximately 300 fish had a strange taste.

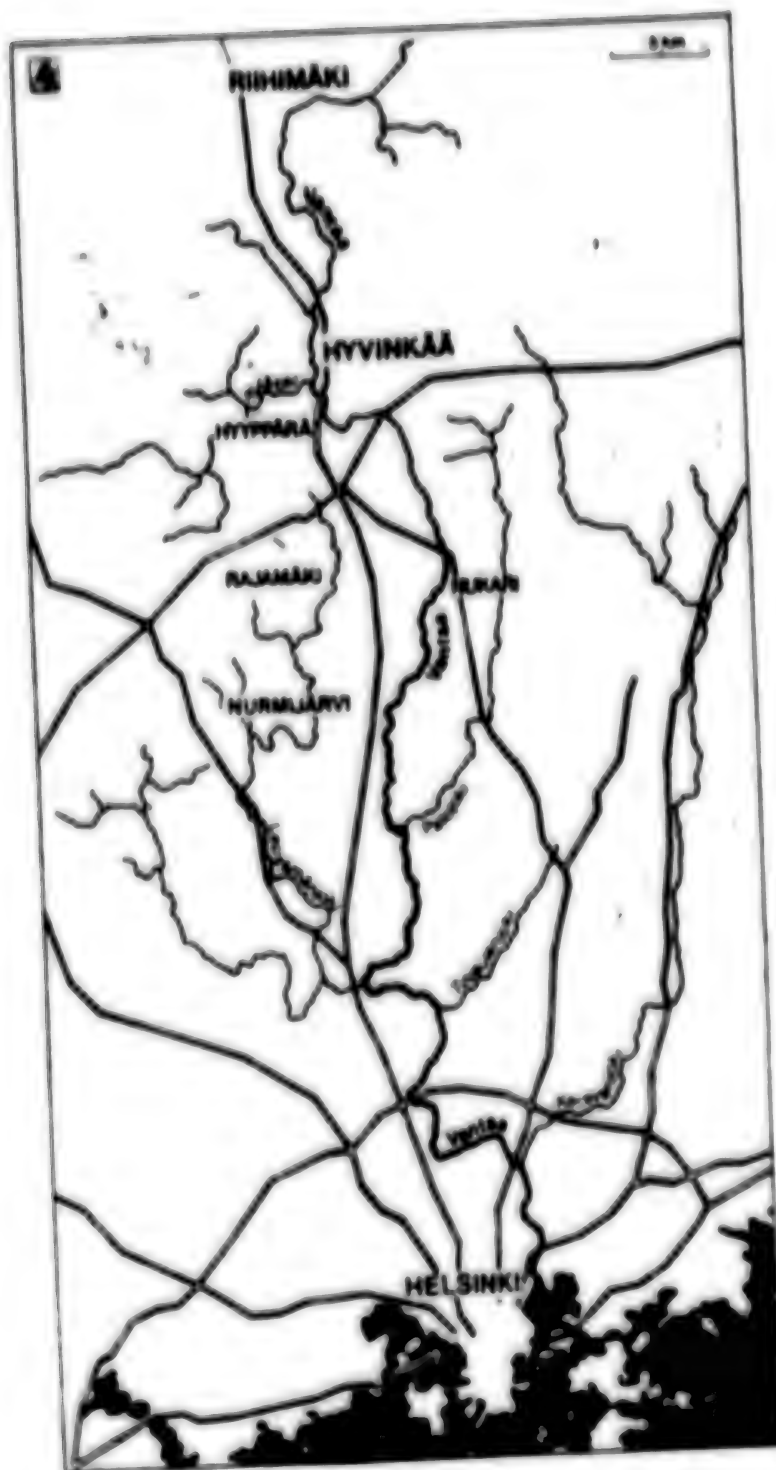
The mercury and lead content of the fish subjected to examination did not exceed the permissible limits.

It is believed that the fish situation in the Vantaa River will continue to improve as the purification of waste water becomes more efficient.

On the basis of the report the Helsinki Water District proposes that the central purification plant at Riihimäki be expanded, a new central purification plant be built at Hyvinkää, and that the purification plants at Rajamäki and Klaukkala be expanded.

It is believed that the proposed action will improve the condition of the basin since the amount of waste water dumped into the system will be reduced by several dozen percentage points. It is expected that the oxygen content of the upper reaches of the Vantaa River will improve significantly.

In the opinion of the Helsinki Water District the municipalities dumping waste water into the basin should also continuously examine their effect on the stock of fish in the Vantaa River. In the future it is also expected that fish fry will be planted in the area.



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## HELSINKI DEVELOPS 'TROUGH' WASTE BURYING METHOD

Helsinki HELSINGIN SANOMAT in Finnish 13 Dec 80 p 11

[Article: "Helsinki Contemplates Subsurface Disposal of Waste"]

[Text] Helsinki is planning a new method of waste disposal. Instead of dumps on the surface requiring large amounts of urban space, the city is contemplating the development of a waste trench dug into solid rock as a new solution to waste disposal.

This is considered as a fast and effective method for disposing of waste into nature while keeping detrimental environmental effects to a minimum. In addition, the rock obtained from the trench can be put to beneficial use.

The geotechnical section of Helsinki's real estate division has done a study on the benefits that the city's good quality bedrock has to offer. This very "Finnish waste treatment idea" was one of the results of this study. The idea was also given impetus by the shortage of gravel that will affect Helsinki in the latter part of the 1980's.

In the opinion of the geotechnical section declining gravel reserves could be filled with the crushed rock obtained from the bedrock and it could be used for land fill, among other things, along Helsinki's coastline. It has been a shortage of crushed rock that has delayed the repair and renovation of the shoreline. If waste is deposited in trenches dug into bedrock, from which crushed rock is put to good use, a beneficial total solution to the problem can be achieved, states the geotechnical section.

According to Section Chief Usko Anttikoski industrial and construction wastes have continuously been disposed of in soft bottom bays along the coastline. "Thus the stability of such dumps has been questionable. Water in higher elevations has also freely flowed into the environment. It is just for this reason that an attempt is being made to find a better solution for the disposal of wastes," states Graduate Engineer Anttikoski.

#### A Trench Requires Only 5 Hectares of Land

A 2-million cubic meter dump requires a surface area of 30 hectares, in addition to which a so-called protective area is also needed. A dump situated in a trench dug into hard bedrock, on the other hand, requires only 5 hectares of surface area.



The trench would be dug into the bedrock in terraces, and traffic into the trench would move along an incline roadway. The quarried rock will be transported to a rock crusher for further processing or to construction projects along the shore. The width of the trench at the earth's surface will be 220 meters and 120 meters at the bottom. Its depth will be 80 meters.

When the trench is completed, if needed, the bottom will be sealed with concrete and covered with a heavy duty filter fabric. Waste will be deposited on top of this in layers.

Water will flow to the bottom of the trench and it will be allowed to rise and flow into collection pipes at the corners of the trench, from which the water will be pumped into the sewer system. Since the surface of the ground water in the trench will be kept lower than the surface of the surrounding water, the flow of water will be continuously toward the trench and the water in the trench will not flow into the environment.

When the trench is full, it will be covered with a thick layer of ash from power plants and then with a layer of clay. Later the surface will be planted with vegetation.

#### A Profit From the Trench

The construction of such a "waste receptacle" is considered to be beneficial. It is expected that the value of the rock from the trench will continue to increase, and at this time it is approaching 15 markkas per cubic meter. By 1985 its value may reach 25 markkas according to the geotechnical section.

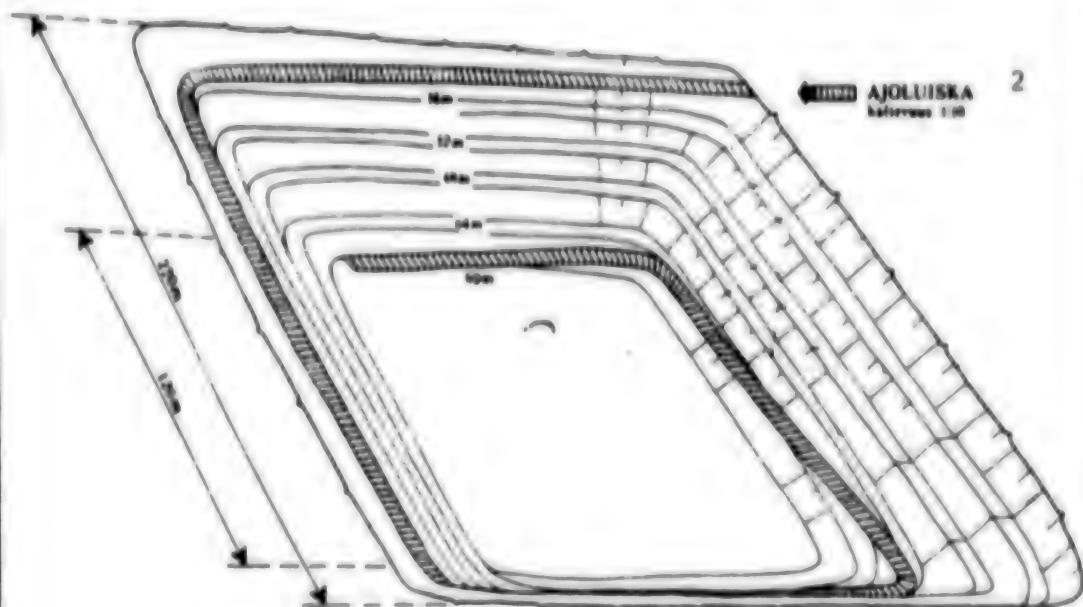
Thus the construction of the waste trench will cost the city 14.5 million markkas at this year's price level, but at the price level in 1985 the trench could even bring a profit of 5 million markkas according to the geotechnical section.

A trench of this size will be able to handle and accommodate waste from the city for a period of 5-10 years. Small trenches could also be dug for experimental purposes. Depending on its size 2-5 years will be needed for the construction of the trench and 4-8 years correspondingly for filling it.

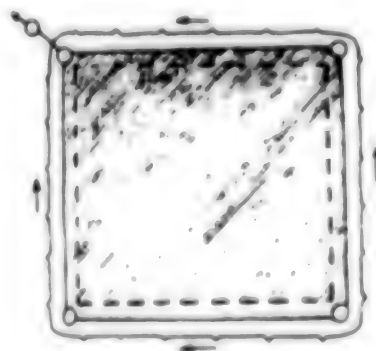
In the opinion of the geotechnical section the waste trench could even be suitable for a recreational area since after it is filled the surface can be restored to its original condition. Several locations can be found for such a "waste receptacle".

For the purpose of conducting experiments the geotechnical section has studied the area of Kivikko along Lahtentie Road, the area around the present dump at Vuosaari, and the low land areas along the bay adjacent to Vanhakaupunki (Old City).

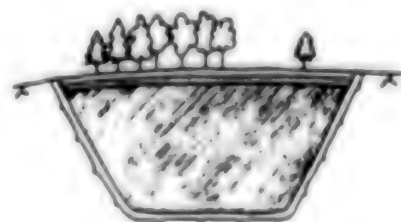
# 1 JÄTEKAIVANTO



3 PUHJANTOON PUMPPAUS 1 METRIN SYVYYDINTÄ JA PUHJ. JÄTEVEDEN VIEMÄRIIN



4 KUOPPA TÄYTEITYNÄ



Helsinki is planning the construction of waste troughs, which will not require extensive areas of land, to replace current waste disposal dumps. The trough would be 80 meters deep. When it is full, it will be covered and planted with vegetation. The crushed rock obtained from the trench would be used in construction projects.

Key:

1. Waste trench
2. Transport incline, gradient 1:10
3. Pumping of bottom water from a depth of 5 meters and distribution system
4. Filled trench

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## NAVY CARRIES OUT POLLUTION-PREVENTION EXERCISE

Paris LE MONDE in French 6 Jan 81 p 11

[Text] An exercise in providing technical assistance to an oil tanker with simulated machinery breakdown which took place on Saturday, 3 January, about 40 miles (about 75 kilometers) north of Quessant ([Department of] Finistere) put into operation substantial facilities of the French Navy at Brest.

This exercise, called "Azteque 2," supplemented the experiment carried out in 1978 in good weather. Its purpose was to investigate the feasibility of keeping a tanker with breakdown away from the coast in bad weather with little advance warning. The wind blew in 75-kilometer per hour gusts and there were waves of 5 to 6 meters. The tanker "l'Emeraude" displaced 220,000 tons.

The tugboat "Abelle-Flandre" which is at the continuous disposition of the maritime prefecture, the frigate "de Grasse" which provided operations coordination, and a Super-Frelon helicopter with the inspection and intervention team of the Brest maritime prefecture were soon in the area. An hour after the alert the marine technicians, two officers and six men, were lowered from the helicopter to the deck of the tanker and a quarter of an hour later the tow was under way.

According to a navy spokesman at Brest this experiment shows that when "the navy is informed in time it can intervene effectively, even in bad weather."

This type of exercise was decided on after the wreck, 14 March 1978, of the "Amoco Cadiz," loaded with 230,000 tons of petroleum, in a storm at sea off Portsall, in Finistere. Since then the maritime prefectures--at Brest, Cherbourg, and Toulon--have been designated to represent the prime minister, who is coordinator of all activities at sea for surveillance and prevention of, and fighting pollution.

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## BRIEFS

**INDUSTRIAL ANTIPOLLUTION MEASURES**--The Nord-Artois-Picardie Basin Agency which is headed by Jacques Vernier has devoted its first technical paper to the balance sheet of the 10-year campaign against industrial pollution. This is a voluminous well presented document\* which examines the activities of the regions concerned with a fine-tooth comb and underscores the accomplishments since 1969, as well as the black marks; e.g., a textile industry in Calais, a brewery in Armentieres, a starch plant on the Lys River, a cardboard factory near Douai. It is true that there is considerable work to do, if account is taken of the fact that the most polluting industries are all located in Nord, Artois and Picardie and that they are large users of water. The Agency has spent about 50 percent of its allocations (241 million francs expended). However, to reach the desired level of purification; i.e., the practical elimination of industrial pollution from now to 1985, it is necessary to locate an additional 340 million francs. (\*Agence de l'eau Nord-Artois-Picardie, 764, boulevard Lahure, 59058 Douai, 27-87-01-94) [Text] [Paris LE MONDE in French 30 Dec 80 p 22] 8143

**FUND TO CLEAN SEINE**--An 8-billion franc action plan to improve the quality of the Seine's water and that of its tributaries will be established for the years 1982 and 1986. The Seine-Normandie Basin Committee, headed by Andre Bettencourt, and the agency's administration council, chaired by Lucien Lanier, prefect of the Ile-de-France region, met in Paris on 16 December and appointed Jean Chamant, president of the general council of Yonne, to direct the work of the four preparatory committees. The campaign against water wastage and nitrogen and phosphate pollution are among the priorities. The most important work will be the construction of the "Aube" dam and the giant purification station in Valenton. In 30 years, the number of purification stations serving the communes has increased from 1,100 to 1,300. However, the linking networks are not all completed. [Text] [Paris LE MONDE in French 20 Dec 80 p 17] 8143

CSO: 5000

# PROVINCIAL LEGISLATURE TAKES STEP TO STOP INSECTICIDE USE

Stockholm DAGENS NYHETER in Swedish 23 Dec 80 p 2

[Editorial]

[Text] At the latest provincial council meeting of Stockholm Province, a decision was made that caused great commotion. In the future, the council will lease out its 17 farms consisting of a total of 1,500 hectares preferentially to farmers who cultivate their crops without the use of insecticides.

Opposing poisons in agriculture is praiseworthy, but it cannot be done with such methods. For many decades farmers have been forced to rationalize production. The agricultural agreement includes annual gains from rationalization amounting to around 4 percent. These must come by way of higher yield and reduced labor. A necessary prerequisite for this is the use of chemical pesticides and chemical fertilizers.

The Center Party, the Social Democrats, and the Left Party Communists are behind the decision of the provincial council. In the real estate committee, where the proposal was first considered, the Social Democrats took a different position: The provincial council's agricultural and forestry policies should be based on decisions on the national level. This should be a natural position.

Provincial council member Knut Nilsson (Center Party), who is in charge of the matter, stated in an agricultural program on the radio last week that all consumers must bear the costs of poison-free agriculture. But as long as prices are based on the use of pesticides, it is not possible to ask a few farmers to do without pesticides without compensation. Profit margins are so small that this would be impossible for most farmers. In addition, Nilsson could not promise that the leasing fees would be reduced.

The positive side of the decision, however, is that the debate is being given new impetus and agricultural policies are being examined. A study by the agricultural university, which was recently made public, shows that chemical-free agriculture would cost 1.5 to 2 billion kronor per year, or 200 kronor per person.

This does not sound insurmountable, but of course it requires major adjustments, perhaps a development toward smaller units, more multifaceted operation, and more work.



It is possible that despite--or perhaps rather because of--the tight economy, such changes may be politically acceptable. Behind the rapid rationalization of agriculture lay not only the desire for inexpensive produce. Another force that was at least as important was the desire to free labor for industry, which was calling for people. Now that it is industry that is releasing labor, perhaps the road back to agriculture is a natural one. From the standpoint of society, it must be desirable to reduce both unemployment and the use of chemical pesticides. A larger agricultural population, in turn, would give rise to new job possibilities, for example, in the areas of service and trade.

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## UNIVERSITY REPORT LOOKS AT COST OF POISON-FREE FARMING

Stockholm SVENSKA DAGBLADET in Swedish 15 Dec 80

[Article by Hans O. Alfredsson]

[Text] It would cost between 1.5 and 2 billion kronor per year to completely eliminate the use of chemical pesticides in agriculture. The important winter wheat crop would be eliminated entirely.

This was made clear in a study carried out by the agricultural university in Uppsala. In reality, the costs could be even greater.

"We have considered alternatives that include new methods, which have not been sufficiently developed at present," says agronomist Bjorn Sundell, who wrote the report.

It would be especially difficult to keep up production of oil-yielding plants, potatoes, and sugar beets.

An immediate stop for all chemical pesticides would cost around 600 million kronor the first year. After that, it would become more and more expensive. This is because there are not so many weeds at present and that the crops are, as Bjorn Sundell puts it, "quite healthy."

## Mechanical Control

In the long run it would cost 825 million kronor per year, for example, to completely stop spraying against weeds. Stopping chemical control of fungus diseases and harmful insects would cost 550 and 150 million kronor, respectively.

Instead, increased mechanical weed control, different crop rotations, increased fallow land, resistant crop varieties, and regionally coordinated cultivation of oil-yielding plants would be used.

Despite this, not all pests could be controlled. It is feared, for example, that the winter wheat blight might mean that this crop could not be cultivated at all.

Is it then at all possible to get by without using chemical methods?

"It is not completely unrealistic," Bjorn Sundell says. "But massive adjustments in production should certainly be expected."

#### Occupational Health Risks

The report also stresses that residual quantities of the substances in produce are considered relatively harmless in most crops. In most instances, it is this risk that receives the most attention in the debate. It is no greater than the risks caused by food coloring, preservatives, overcooking meat, etc.," Bjorn Sundell points out.

Most serious are the occupational health risks for farmers and for those who work directly with spraying. The risk of "long-term negative environmental effects" may also be "considerable," the report states.

Chemical agents have been used in agriculture since the 19th century. Their use was greatly accelerated after the Second World War. Since then, their use has increased more and more.

"The quantities have not always increased. However, the number of hectares treated has increased. The substances have become more concentrated."

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